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3
THE TIMBER REQUIREMENTS FOR FARM FENCING IN THE PACIFIC NORTHWEST

by

J. ELTON LODWICK

24.
PACIFIC NORTHWEST FOREST EXPERIMENT STATION

PORTLAND, OREGON

JULY -- 1934



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THE TIMBER REQUIREMENTS FOR FARM FENCING IN THE PACIFIC NORTHWEST

by

J. ELTON LODENICK, 1896-

GENERAL

Among the many items produced by the forests of the country are posts and fencing lumber for the farms. The latest analysis^{1/} indicates that approximately 396 million fence posts are cut from commercial forests of the United States each year. This supply is equivalent to 629 million cubic feet of wood, one fourth of which comes from trees of sawtimber size^{2/}. Johnson^{3/} computed a total of 51,200,000 posts in the farm fences of Oregon and Washington, with an estimated annual replacement of approximately four million. On a volume basis, the wood required to replace farm fence posts in the Pacific Northwest each year is 2.7 percent of that used for all of the so-called minor timber products. Among these products it ranks fifth, being exceeded by the volume required for poles, piling, fuelwood, and pulpwood. The volume of wood needed for fence posts warrants efforts to obtain more detailed information regarding its magnitude, especially as reliable sources of data become available.

-
- 1/ A National Plan for American Forestry. Senate Document No. 12: 1st Session, 73rd Congress. Vol. I: pp 214-215. 1933
 - 2/ Trees over 16 inches in diameter at 4½ feet above ground.
 - 3/ Johnson, H. M. The Production and Consumption of Minor Timber Products in Oregon and Washington. U. S. F. S. Pacific Northwest Forest Experiment Station. Mss. Report. October, 1931

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Among the many items produced by the forests of the country are the various kinds of lumber for the farms. The latest analysis indicates that approximately 300 million board feet are cut from the forests of the United States each year. This supply is equivalent to 100 million cubic feet of wood, one fourth of which comes from the forests of the Pacific Northwest. Johnson's estimate of a quarter of a billion board feet of lumber in the forests of Oregon and Washington, with an estimated value of approximately four million dollars. On a volume basis, the forests of the Pacific Northwest produce four times as much lumber as the forests of the Atlantic States. The value of the lumber produced in the Pacific Northwest is estimated at \$100 million annually. The value of the lumber produced in the Atlantic States is estimated at \$25 million annually. The value of the lumber produced in the Pacific Northwest is estimated at \$100 million annually. The value of the lumber produced in the Atlantic States is estimated at \$25 million annually.

A detailed description of the various kinds of lumber produced in the Pacific Northwest is given in the report of the United States Forest Service. The report is published by the United States Forest Service, Department of Agriculture, Washington, D. C. The report is published by the United States Forest Service, Department of Agriculture, Washington, D. C. The report is published by the United States Forest Service, Department of Agriculture, Washington, D. C.

Fencing in urban areas is rather limited in amount and shows evidences of decreasing, at least insofar as the use of wood is concerned, because of the introduction of ornamental wire fencing supported on metal posts. Consequently the wood required for urban fencing in the future undoubtedly will be negligible, and may be disregarded when estimating expected demands on forest resources.

Fencing in rural areas may be separated into three general types; farm fencing, fencing along railroad rights-of-way, and the fencing or guard rails installed on highways. The present installation and rate of replacement of each of these are influenced by factors peculiar to the type. Hence wood requirements for each must be determined separately. The data presented herein pertain only to farm fencing.

SOURCE OF DATA

For the present investigation it has been possible to obtain records of the amount of fencing on farms whose acreages were known. These records were found in the applications for loans at the Federal Land Bank of Spokane, and were made available through the courtesy and cooperation of the officers of that bank.

Data were obtained on 763 Oregon and 1510 Washington farms. Most of them were copied from the file of rejected and withdrawn loan applications which are filed in the order of their receipt at the bank. A few of the data were copied from reappraisal records. An analysis indicates that the ratio of fencing to acreage on the farms covered by the reappraisals does not differ from that obtained from the other file. Consequently the data from both sources were merged. Several groups of ap-

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plications were arbitrarily chosen from different parts of the file in order to obtain applications submitted throughout the 10-year period 1923-1933. No other selection of samples was made, and in each group all the applications listing both acreage and amount of fencing were included.

The file of rejected and withdrawn applications was used in preference to the file on which loans had been granted partly because they were less voluminous and partly because they were less in demand by members of the bank staff. But this choice was made only after consultation with bank officials and appraisers had brought out the fact that the amount of fencing on these farms would be comparable to that on farms to which loans had been granted. It was the concensus of opinion that any differences which might exist would be in the state of repair rather than in amount.

ADEQUACY OF THE DATA

The number of samples obtained are equal to 1.2 percent of the farms in Oregon, 2.1 percent of those in Washington, and 1.8 percent of those in the two states combined.

A comparison of the Oregon and Washington samples with the census data in respect to the number and average acreage of farms in each size class is presented in Table 1. From this it is evident that the sample contains a larger proportion of the medium-sized farms and a smaller proportion of the large and the small farms. It is also evident that the average size of the sample farm in all but a few instances is greater than the census average for the same size class.

The following were arbitrarily chosen from different parts of the file in
 order to obtain applications submitted throughout the 10-year period
 1918-1928. No other selection of samples was made, and in each group
 the applications listing both average and amount of fencing were
 included.
 The file of rejected and withdrawn applications was used in
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 they were same requirements and partly because they were less in demand
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ANALYSIS OF THE DATA

The number of samples obtained are equal to 1.8 percent of
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 dent that the average size of the sample farms is all but a few instances
 greater than the census average for the same size class.

Table 1.-Comparison of the numbers and acreages of the average farms by size classes

Size of Farm Acres	Number of Farms						Acreage of Average Farm					
	Oregon			Washington			Oregon			Washington		
	Sample:	Percent:	Census:	Sample:	Percent:	Census:	Sample:	Percent:	Census:	Sample:	Percent:	Census:
	Number:		Number:	Number:		Number:	Number:		Number:	Acres:	Acres:	Acres:
1-19	24	3.1	12,666	23.0	160	10.6	23,394	33.0	11.7	8.8	11.7	8.5
20-49	118	15.5	10,573	19.2	407	27.0	16,853	23.7	34.4	32.6	32.8	31.5
50-174	282	37.0	17,625	31.9	580	33.4	17,188	24.2	113.9	104.8	112.5	103.0
175-499	201	26.3	8,264	15.0	280	18.5	7,232	10.2	315.0	292.4	307.8	307.3
500-999	72	9.4	3,029	5.5	62	4.1	3,518	5.0	714.6	698.2	729.0	708.1
1000 & over	66	8.7	2,996	5.4	21	1.4	2,739	3.9	2536.4	3242.3	1799.0	2308.1
Totals	763	100.0	55,153	100.0	1,510	100.0	70,904	100.0	417.1	300.0	165.3	191

Table 2.-The relation between fencing and acreage
on farms in the Pacific Northwest. (Basis
673 samples in Oregon and 1510 samples in
Washington)

Size of farm	Amount of fencing per acre		
	Oregon	Washington	Pacific Northwest
Acres	Rods	Rods	Rods
1-19	13.63	13.97	13.92
20-49	19.00	9.23	9.22
50-174	4.64	4.87	4.80
175-499	3.22	3.15	3.13
500-999	2.37	2.30	2.34
1000 & over	1.53	1.78	1.57
All farms	2.42	3.65	2.96

1. The first part of the report is devoted to a general
 description of the work done during the year.
 2. The second part contains a detailed account of the
 results of the experiments.

Table showing the results of the experiments			
Experiment No.	Time taken	Distance covered	Speed
1	10.0	100.0	10.0
2	12.5	125.0	10.0
3	15.0	150.0	10.0
4	17.5	175.0	10.0
5	20.0	200.0	10.0
6	22.5	225.0	10.0
7	25.0	250.0	10.0
8	27.5	275.0	10.0
9	30.0	300.0	10.0
10	32.5	325.0	10.0

PROCEDURE

The data were sorted and summarized to show the rods of fencing per acre on farms of different sizes. The size classes selected were those which would permit the use of the classifications adopted by the U. S. Bureau of the Census, and still preserve the characteristic trend of the fencing-acreage ratio.

The ratios as computed for Oregon and Washington are presented in Table 2. The ratio for any given size class in one state does not differ significantly from that in the other state. Hence there is no reason why the data should not be combined to form one set of ratios applicable to farms in the Pacific Northwest. The results of such a combination are presented graphically in Figure 1.

It is evident that there is a decrease in the amount of fencing per acre with an increase in the acreage of the farm. Thus in farms of 10 acres there are 13.85 rods of fencing per acre as compared to 8.25 rods in 40-acre farms, 4.85 rods in 100-acre farms, 2.5 rods in 500-acre farms, and only 1.5 rods in 3000-acre farms.

TYPES OF AND TRENDS IN FENCING

An inspection of farm fencing in Oregon and Washington reveals a wide variation in fence types, some of which contain no wood and some of which require more than an average amount of wood. An analysis of these from the only known source of information on the amount of each type of fencing, the loan applications in the Federal Land Bank of Spokane, indicate that many of the types may be disregarded in an investigation of wood requirements.

CHAPTER I

THE FIRST PART OF THE HISTORY OF THE UNITED STATES

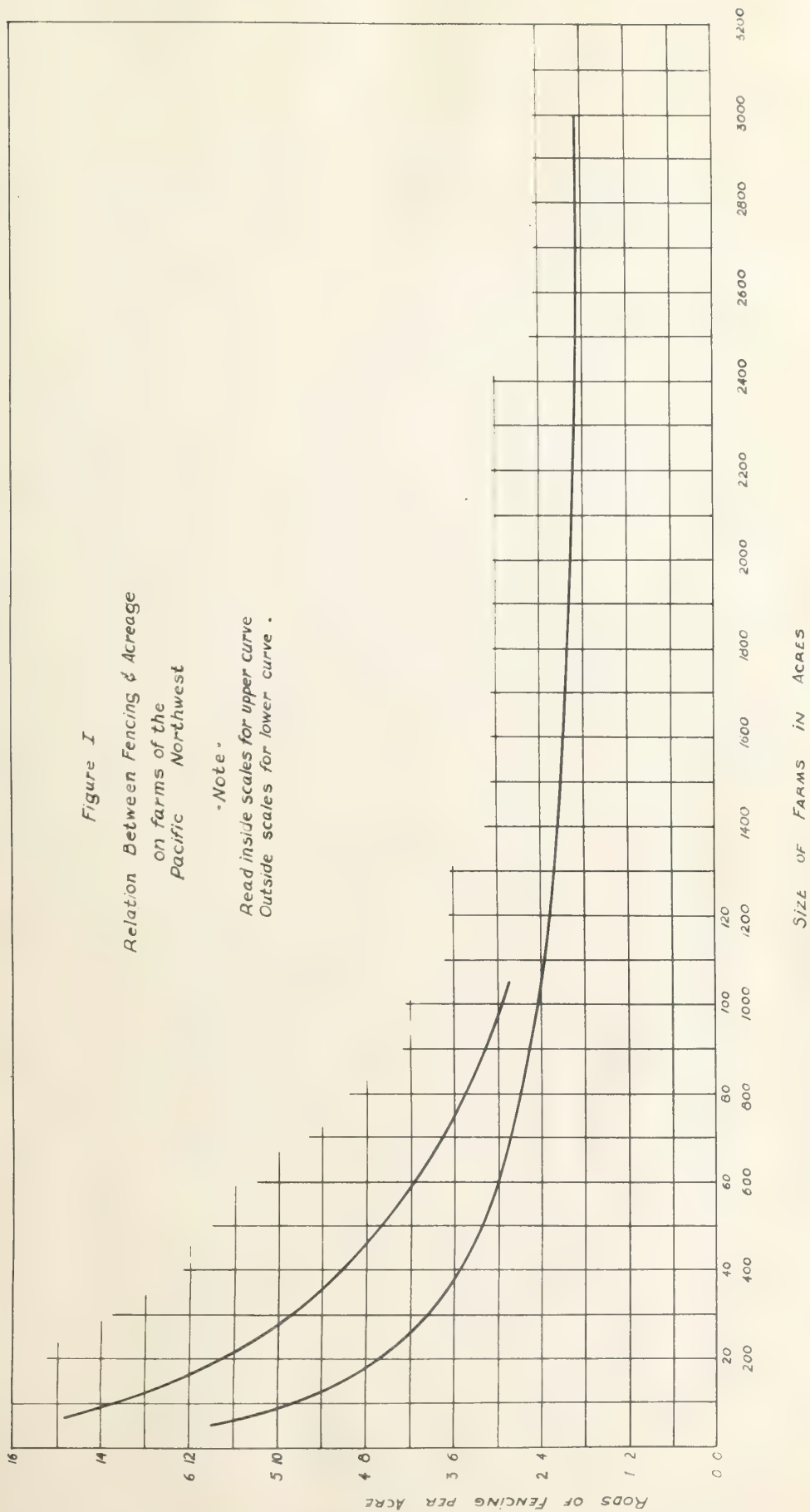
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CHAPTER II

THE SECOND PART OF THE HISTORY OF THE UNITED STATES
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Stone fencing is found principally in portions of the irrigated districts in the eastern part of the region where it replaces wire fences. Rail, snake, or worm fences are most common in the coastal region where western red cedar attains its optimum development, but are also found occasionally in the Willamette Valley^{and} on the slopes of the Cascade Mountains. These are being replaced by other types because of the depletion of suitable cedar on the farm woodlot and because of the extent to which they decrease the tillable land. The latter factor is not to be ignored. Measurements in Maryland^{4/} show that the rail fence necessitates leaving a strip of land eight feet in width as compared to only three feet for a woven wire fence. Both the stone fence and the rail fence are present in such small amounts (640 rods and 4,280 rods respectively in a sample of 81 $\frac{1}{2}$ million rods) that they may be considered as post and wire fencing without introducing a measurable error.

Brush fences, made by weaving brush into the wires of a post and wire fence, bark fences using bark instead of brush, and the wire and picket fence in which the pickets are made of lath or of split saplings may also be ignored. They require the same amount of basic material as does the post and wire fence. The additional material, such as brush, bark and pickets, do not constitute a drain upon the forest because they are materials resulting from land clearing which if not used in fences would be burned. These types of fencing are found in short lengths around small pastures and garden plots principally on newly developed farms.

^{4/} Economic Efficiency of the Farm Layout in Maryland, by A. B. Hamilton and S. H. DeVault. The University of Maryland Agri. Exp. Station, College Park, Maryland. Bulletin No. 338, October, 1932.

Stone fencing is found principally in sections of the hill-

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wire fences. Rail, angles, or worn fences are most common in the

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One type of fence, however, requiring an allowance for wood over and above that contained in the post and wire fence is common enough to merit attention. This is the so-called wire and board fence in which one or more boards, usually 1"x6" extend from post to post. The type with one board, either near the top or about halfway up is more common than that with two or three boards. Closely allied to this and frequently confused with it, is one in which 2-inch or 3-inch poles replace the boards. Of the 81,636,000 rods of fencing in the Oregon and Washington samples, 43,211 rods were reported as board and wire, and 85,586 as rail and wire. It is believed that an appreciable proportion of the latter is board and rail. For the purposes of this report all of it will be so considered. This would indicate approximately 129,000 rods of 1"x6" lumber installed in farm fencing in the two states. Under an assumed life expectancy of 12 years the annual replacement requirement would be 110,000 feet. This requirement is believed to be ample to cover any other regional use of lumber in farm fencing.

(One type of fence, however, was found in different locations)

[illegible]

There is some evidence that cross-fencing is being eliminated on large stock and wheat ranches. An analysis of the sample data from applications made in 1923-1924 and those made in 1931-1933, however, show no distinctive differences in the ratios for the two periods. Therefore, no allowance need be made for either an increase or a decrease in the present amount of fencing in the region.

Post requirements will be estimated upon the basis of round and split wood posts with an average life of 12 years and set one rod apart. To date there is no indication that concrete, metal, or sawed wood posts constitute a measurable portion of the fence posts in use. Neither is there reason for believing that these types will increase in favor in the near future. An expectancy of 12 years life for the average post in this region appears to be justified. Approximately 80 percent of the posts in use are western red cedar with a life expectancy of 15 years. The less durable species, such as cottonwood and ponderosa pine, are used in the eastern part of the region under semi-arid conditions which prolong their life. There is no evidence that preservative treatment will become common enough to influence the life expectancy of posts. The spacing of posts at an average interval of one rod is justifiable. This is by far the most common practice, and the 8-foot spacing practiced under some conditions on the west side is offset by the 20-foot spacing used on the east side where wood is scarce.

The use of living trees as fence posts is seldom seen in this region, therefore, no adjustment need be made for this practice.

There is one website that provides the following information:

1997-1998-1999-2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-2271-2272-2273-2274-2275-2276-2277-2278-2279-2280-2281-2282-2283-2284-2285-2286-2287-2288-2289-2290-2291-2292-2293-2294-2295-2296-2297-2298-2299-2300-2301-2302-2303-2304-2305-2306-2307-2308-2309-2310-2311-2312-2313-2314-2315-2316-2317-2318-2319-2320-2321-2322-2323-2324-2325-2326-2327-2328-2329-2330-2331-2332-2333-2334-2335-2336-2337-2338-2339-2340-2341-2342-2343-2344-2345-2346-2347-2348-2349-2350-2351-2352-2353-2354-2355-2356-2357-2358-2359-2360-2361-2362-2363-2364-2365-2366-2367-2368-2369-2370-2371-2372-2373-2374-2375-2376-2377-2378-2379-2380-2381-2382-2383-2384-2385-2386-2387-2388-2389-2390-2391-2392-2393-2394-2395-2396-2397-2398-2399-2400-2401-2402-2403-2404-2405-2406-2407-2408-2409-2410-2411-2412-2413-2414-2415-2416-2417-2418-2419-2420-2421-2422-2423-2424-2425-2426-2427-2428-2429-2430-2431-2432-2433-2434-2435-2436-2437-2438-2439-2440-2441-2442-2443-2444-2445-2446-2447-2448-2449-2450-2451-2452-2453-2454-2455-2456-2457-2458-2459-2460-2461-2462-2463-2464-2465-2466-2467-2468-2469-2470-2471-2472-2473-2474-2475-2476-2477-2478-2479-2480-2481-2482-2483-2484-2485-2486-2487-2488-2489-2490-2491-2492-2493-2494-2495-2496-2497-2498-2499-2500-2501-2502-2503-2504-2505-2506-2507-2508-2509-2510-2511-2512-2513-2514-2515-2516-2517-2518-2519-2520-2521-2522-2523-2524-2525-2526-2527-2528-2529-2530-2531-2532-2533-2534-2535-2536-2537-2538-2539-2540-2541-2542-2543-2544-2545-2546-2547-2548-2549-2550-2551-2552-2553-2554-2555-2556-2557-2558-2559-2560-2561-2562-2563-2564-2565-2566-2567-2568-2569-2570-2571-2572-2573-2574-2575-2576-2577-2578-2579-2580-2581-2582-2583-2584-2585-2586-2587-2588-2589-2590-2591-2592-2593-2594-2595-2596-2597-2598-2599-2600-2601-2602-2603-2604-2605-2606-2607-2608-2609-2610-2611-2612-2613-2614-2615-2616-2617-2618-2619-2620-2621-2622-2623-2624-2625-2626-2627-2628-2629-2630-2631-2632-2633-2634-2635-2636-2637-2638-2639-2640-2641-2642-2643-2644-2645-2646-2647-2648-2649-2650-2651-2652-2653-2654-2655-2656-2657-2658-2659-2660-2661-2662-2663-2664-2665-2666-2667-2668-2669-2670-2671-2672-2673-2674-2675-2676-2677-2678-2679-2680-2681-2682-2683-2684-2685-2686-2687-2688-2689-2690-2691-2692-2693-2694-2695-2696-2697-2698-2699-2700-2701-2702-2703-2704-2705-2706-2707-2708-2709-2710-2711-2712-2713-2714-2715-2716-2717-2718-2719-2720-2721-2722-2723-2724-2725-2726-2727-2728-2729-2730-2731-2732-2733-2734-2735-2736-2737-2738-2739-2740-2741-2742-2743-2744-2745-2746-2747-2748-2749-2750-2751-2752-2753-2754-2755-2756-2757-2758-2759-2760-2761-2762-2763-2764-2765-2766-2767-2768-2769-2770-2771-2772-2773-2774-2775-2776-2777-2778-2779-2780-2781-2782-2783-2784-2785-2786-2787-2788-2789-2790-2791-2792-2793-2794-2795-2796-2797-2798-2799-2800-2801-2802-2803-2804-2805-2806-2807-2808-2809-2810-2811-2812-2813-2814-2815

1991-1992 and 1993-1994

There is a significant difference in the mean scores of the two groups, $F(1, 10) = 10.00, p = .008$.

There is no record of any such meeting.

...and it is not possible to ...

Source: U.S. Census Bureau, *Current Population Reports*, 1990.

For 1991, the first survey of the 1982 elections on other issues, the following was

REPORT OF THE DIRECTOR, BUREAU OF REVENUE, ON THE REVENUE OF THE UNITED STATES, 1914.

[illegible]

...the

THE UNIVERSITY OF CHICAGO

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Under the provisions of the 1964-65 Budget Act, the rate of 5%

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100-443887-1000

... ..

For any $\epsilon > 0$, there exists $\delta > 0$ such that if $\|x - x^*\| < \delta$, then $\|x - x^*\| < \epsilon$.

1987-2 and 1987-3 primary schools have not yet been identified.

WE DO NOT AT THIS TIME HAVE ANY OF INDIVIDUALS WITH UNDER INVESTIGATION.

...series of four small white face and ...

and at some mobile or other point in the world.

... ..

Table 3.-Acreage, amount of fencing, and number of fence posts on farms in the Pacific Northwest

Oregon				Washington			
Acreage in this group	Fencing: acreage	Rods of fencing: number of posts	Acres in this group	Fencing: acreage	Rods of fencing: number of posts	Acres in this group	Fencing: acreage
1-19	111,295	14.10	1,569,260	199,249	14.35	2,859,223	4,428,483
20-49	344,639	9.35	3,222,375	529,386	9.50	5,029,167	8,251,542
50-174	1,847,861	4.70	8,684,247	1,769,679	4.75	8,405,975	17,090,922
175-499	2,416,034	3.55	8,576,921	2,222,351	3.50	7,778,229	16,355,150
500-999	2,114,707	2.35	4,969,561	2,491,091	2.35	5,845,064	10,823,625
1000 & over:	9,714,142	1.50	14,571,213	6,322,022	1.60	10,115,235	24,686,443
Totals and averages	16,548,678	2.51	41,594,277	13,533,778	2.96	40,041,893	81,636,170

Year	Month	Day	Time	Location	Activity	Remarks
1900	Jan	1	10:00	St. Paul	Prayer	First day of the year
1900	Jan	2	10:00	St. Paul	Prayer	
1900	Jan	3	10:00	St. Paul	Prayer	
1900	Jan	4	10:00	St. Paul	Prayer	
1900	Jan	5	10:00	St. Paul	Prayer	
1900	Jan	6	10:00	St. Paul	Prayer	
1900	Jan	7	10:00	St. Paul	Prayer	
1900	Jan	8	10:00	St. Paul	Prayer	
1900	Jan	9	10:00	St. Paul	Prayer	
1900	Jan	10	10:00	St. Paul	Prayer	
1900	Jan	11	10:00	St. Paul	Prayer	
1900	Jan	12	10:00	St. Paul	Prayer	
1900	Jan	13	10:00	St. Paul	Prayer	
1900	Jan	14	10:00	St. Paul	Prayer	
1900	Jan	15	10:00	St. Paul	Prayer	
1900	Jan	16	10:00	St. Paul	Prayer	
1900	Jan	17	10:00	St. Paul	Prayer	
1900	Jan	18	10:00	St. Paul	Prayer	
1900	Jan	19	10:00	St. Paul	Prayer	
1900	Jan	20	10:00	St. Paul	Prayer	
1900	Jan	21	10:00	St. Paul	Prayer	
1900	Jan	22	10:00	St. Paul	Prayer	
1900	Jan	23	10:00	St. Paul	Prayer	
1900	Jan	24	10:00	St. Paul	Prayer	
1900	Jan	25	10:00	St. Paul	Prayer	
1900	Jan	26	10:00	St. Paul	Prayer	
1900	Jan	27	10:00	St. Paul	Prayer	
1900	Jan	28	10:00	St. Paul	Prayer	
1900	Jan	29	10:00	St. Paul	Prayer	
1900	Jan	30	10:00	St. Paul	Prayer	
1900	Jan	31	10:00	St. Paul	Prayer	

1900

Table 4.-Estimated annual farm fence post replacements by species in Oregon & Washington

State	Estimated annual number of posts required									
	Total	Western red:	Western:	Douglas	Ponderosa:	Western:	Lodgepole:	Misc.		
	: all species :	cedar :	larch :	fir :	pine :	juniper:	pine :	Oak :	species	
Oregon	: 3,466,190 :	: 2,477,286 :	: 429,114 :	: 143,847 :	: 71,404 :	: 142,460 :	: 22,877 :	: 133,448 :	: 45,754 :	
Washington	: 3,336,824 :	: 2,561,012 :	: 523,548 :	: 178,854 :	: 51,387 :	: 4,338 :	: 4,338 :	: 17,685 :		
Pacific Northwest:	6,803,014 :	5,038,298 :	952,662 :	322,701 :	122,791 :	142,460 :	27,215 :	133,448 :	63,439 :	

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Year	Month	Day	Time	Location	Event	Remarks
1900	Jan	1	10:00	St. Paul's	Service	First service of the year
1900	Feb	1	10:00	St. Paul's	Service	Second service of the year
1900	Mar	1	10:00	St. Paul's	Service	Third service of the year
1900	Apr	1	10:00	St. Paul's	Service	Fourth service of the year
1900	May	1	10:00	St. Paul's	Service	Fifth service of the year
1900	Jun	1	10:00	St. Paul's	Service	Sixth service of the year
1900	Jul	1	10:00	St. Paul's	Service	Seventh service of the year
1900	Aug	1	10:00	St. Paul's	Service	Eighth service of the year
1900	Sep	1	10:00	St. Paul's	Service	Ninth service of the year
1900	Oct	1	10:00	St. Paul's	Service	Tenth service of the year
1900	Nov	1	10:00	St. Paul's	Service	Eleventh service of the year
1900	Dec	1	10:00	St. Paul's	Service	Twelfth service of the year

FARM FENCE POST REQUIREMENTS IN THE PACIFIC NORTHWEST

The estimated amount of farm fencing in the Pacific Northwest by states and by farm-size classes is shown in Table 3. Under the assumption of one post per rod the figures represent also the estimated number of posts now installed in farm fences. These data were computed from the acreages in each size class, as given in the 1930 census reports, and the ratio given in Figure 1 for the average-sized farm in each class.

In accordance with the assumptions outlined above the posts now in fences on the farms of the Pacific Northwest is estimated to be 81,636,170. On the basis of a life expectancy of 12 years, the annual regional requirement for replacement would be 6,803,104 posts, of which 3,466,190 would be in Oregon and 3,336,824 in Washington.

The estimated annual requirements by states and by species are presented in Table 4. The percentage of each species is that determined by Johnson in his study of minor timber products.

COMPARISON WITH PREVIOUS ESTIMATES

Johnson^{5/} arrived at a total of 51,220,411 posts installed in the farm fences of Oregon and Washington in 1930, with an annual replacement requirement of 4,097,632. This author worked from census data on farm size and considered that only plowable land was fenced, that the acreage under fence on the average farm lay in the form of a square, and that there was no cross fencing. The present analysis indicates

^{5/} See footnote page 1.

that the earlier figures were conservative, as was expected, and that the annual demand on the forest for this item should approximate $7\frac{1}{3}$ million cubic feet rather than the $4\frac{1}{2}$ million cubic feet estimated by Johnson.

SUMMARY

1. The availability of Federal Land Bank records showing the amount of fencing on farms of known acreage in Oregon and Washington has made possible the computation of fencing-acreage ratios and a redetermination of annual post requirements.
2. There appears to be a rather definite relation between acreage and the rods of fencing per acre on farms in the Pacific Northwest.
3. The fencing-acreage ratio decreases with an increase in the size of the farm. For example, on the average 10-acre farm nearly 14 rods of fencing per acre are to be expected, on a 40-acre farm 8.5 rods, on a 600-acre farm 2.5 and on a 3000-acre farm only 1.5 rods per acre.
4. On the basis of the fencing-acreage ratios developed in this study, and the acreages of farms shown by the 1930 census, it is estimated that there are 81,636,170 rods of fencing on the farms of Oregon and Washington.
5. Under the assumed use of one post per rod of fence, it is estimated there are 81,636,170 posts now installed in farm fences; 41,594,277 in Oregon and 40,041,893 in Washington.

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great benefit to the country, and it is the duty of the Government to
assist in the building of these new houses, and to provide for the
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CHAPTER

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6. With an average life expectancy of 12 years per post, the estimated annual replacement is 6,803,014 posts, of which 3,466,190 are required in Oregon and 3,336,824 in Washington.

7. The distribution of the estimated annual post requirement by species is shown, using the percentage of species determined by Johnson in an earlier report of this Station.

8. The estimated annual demand on the forests of the Pacific Northwest, under an assumed average volume of 1.08 cubic feet per post, is approximately 7-1/3 million cubic feet.

9. In addition to the requirements for posts there is an estimated annual requirement of 110,000 board feet of lumber for farm fencing in the region.

Date Due

AP 23
Ag 17 '34
Se 11 '35
21 My 36
0 36
My 13 '42

